Reichert 7
Auto Tonometer

User's Guide

Reichert®

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Introduction

Congratulations on your purchase of the Reichert 7 Auto Tonometer.

The Reichert 7 is an auto-aligning, non-contact tonometer used to measure the intraocular pressure of the eye by delivering a very soft air puff or puffs to the eye.

This User's Guide is designed as a training and reference manual. We recommend you carefully read and follow the steps in this guide to ensure optimum performance from your new instrument.

Please retain this guide for future reference and to share with other users. Additional copies can be obtained from your authorized Reichert, Inc. dealer or contact our Customer Service department directly at:

Tel: 716-686-4500
Fax: 716-686-4555
E-mail: info@reichert.com

Indications for use

A tonometer is indicated for measuring intraocular pressure to aid in the screening and diagnosis of glaucoma

Contraindications

Use of the Reichert 7 is contraindicated in instances of:

- Edematous/ulcerated cornea
- Following keratoplasty
- Following penetrating trauma

Warnings & Cautions

Reichert, Inc. (Reichert) is not responsible for the safety and reliability of this instrument when:

- Assembly, disassembly, repair, or modification is made by unauthorized dealers or persons
- Instrument is not used in accordance with this User's Guide

WARNING: AN INSTRUCTION THAT DRAWS ATTENTION TO RISK OF INJURY OR DEATH

WARNING: ANY REPAIR OR SERVICE TO THE REICHERT 7 MUST BE PERFORMED BY EXPERIENCED PERSONNEL OR DEALERS THAT ARE TRAINED BY REICHERT SO THAT CORRECT OPERATION OF THE REICHERT 7 IS MAINTAINED.

WARNING: DO NOT PLACE FINGERS INTO THE OPENING SURROUNDING THE NOSEPIECE

WARNING: THIS INSTRUMENT IS NOT SUITABLE FOR USE IN THE PRESENCE OF FLAMMABLE ANESTHETIC MIXTURES, SUCH AS OXYGEN OR NITROUS OXIDE.

CAUTION: AN INSTRUCTION THAT DRAWS ATTENTION TO THE RISK OF DAMAGE TO THE PRODUCT.

CAUTION: DO NOT USE SOLVENTS OR STRONG CLEANING SOLUTIONS ON ANY PART OF THIS INSTRUMENT AS DAMAGE TO THE UNIT MAY OCCUR. SEE MAINTENANCE SECTION FOR DETAILED CLEANING INSTRUCTION.

CAUTION: USE OF ALCOHOL ON THE LIQUID CRYSTAL DISPLAY (LCD) MAY CAUSE DAMAGE TO THE DISPLAY. SEE MAINTENANCE SECTION FOR DETAILED CLEANING INSTRUCTION.

CAUTION: THIS INSTRUMENT IS NOT SUITABLE FOR USE IN THE PRESENCE OF FLAMMABLE ANESTHETIC MIXTURES SUCH AS OXYGEN OR NITROUS OXIDE.

CAUTION: PORTABLE AND MOBILE RF COMMUNICATIONS EQUIPMENT CAN AFFECT MEDICAL ELECTRICAL EQUIPMENT.

CAUTION: THE INTERNAL CIRCUITRY OF THE INSTRUMENT CONTAINS ELECTROSTATIC DISCHARGE SENSITIVE DEVICES (ESDS) THAT MAY BE SENSITIVE TO STATIC CHARGES PRODUCED BY THE HUMAN BODY. DO NOT REMOVE THE COVERS WITHOUT TAKING PROPER PRECAUTIONS.

CAUTION: MEDICAL ELECTRONIC EQUIPMENT NEEDS SPECIAL PRECAUTIONS REGARDING EMC AND NEEDS TO BE INSTALLED AND PUT INTO SERVICE ACCORDING TO THE EMC INFORMATION PROVIDED IN THE ACCOMPANYING DOCUMENTS.

CAUTION: THIS INSTRUMENT IS NOT TO BE USED NEAR HIGH-FREQUENCY EMITTING SURGICAL EQUIPMENT

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CAUTION: THIS INSTRUMENT IS NOT TO BE USED NEAR HIGH-FREQUENCY EMITTING SURGICAL EQUIPMENT

Symbol Information

The following symbols appear on the instrument.

	Caution symbol indicating important operating and maintenance instructions that are included in this User's Guide
	Type B Product Classification Class 1 Equipment, Continuous Operation
	Alternating Current Power
	Protective Earth Connection
I O	ON / OFF
	Date of Manufacture
[REF]	Catalog Number
	Waste of Electrical and Electronic Equipment
CE 0120	Compliance to Medical Device Directive 93/42/EEC
	Authorized to mark given by Intertek ETL Semko for conformance with electrical standards

Classification

The Reichert 7 is classified as Class 1 Equipment.

Class 1 Equipment is equipment in which protection against electric shock does not rely on basic insulation only, but which includes an additional safety precaution in that means are provided for the connection of the equipment to a protective earth conductor in the fixed wiring of the installation in such a way which accessible metal parts cannot become live in the event of a failure of the basic insulation.

The Reichert 7 is classified as Type B Equipment.

Type B Equipment provides an adequate degree of protection against electrical shock, particularly regarding allowable leakage currents and reliability of the protective earth connection.

The Reichert 7 is classified as IPX0 Equipment.

IPX0 Equipment is ordinary equipment enclosed without protection against ingress of water.

According to the mode of operation, the Reichert 7 is a Continuous Operation instrument

FEDERAL LAW RESTRICTS THIS DEVICE TO SALE BY OR ON THE ORDER OF A PHYSICIAN

Transportation & Storage

This instrument can withstand the following conditions while packed for transportation or storage.

- An ambient temperature range of -40° to +158° F (-40°C to +70°C)
- A relative humidity range of 10% to 80% non condensing
- An atmosphere pressure range of 14.7 inHg to 31.3 inHg (50.0 kPa to 106.0 kPa)

Exposure to these extreme conditions indicated above should not exceed 15 weeks.

Disposal

This product does not generate any environmentally hazardous residues. At the end of its product life, follow your local laws and ordinances regarding the proper disposal of this equipment.

Instrument Setup

Great care has been taken to deliver your new Reichert 7 Auto Tonometer to you safely. The container and packaging was specially designed to transport this unit. Please retain the packaging if future transportation is required.

Shipping Container

Inner Box

Opened Inner Box

Unpacking Instructions

Please remove the packaging material from the instrument in the following manner (Refer to images on left).

The instrument is packaged in a shipping container to protect the instrument from damage during shipment. Please read the User's Guide before operating the unit. A quick Reference Card is provided for your convenience and reference during operation of the unit.

1. Remove the accessories box from the shipping container

   Accessories box contains:
   - Power cord
   - Dust Cover
   - Spare printer paper (2 rolls)
   - Quick Reference Card
   - User's Guide

2. Remove the Top Foam (4 corners) from the shipping container
3. Locate the handles on the sides of the inner box and remove the inner box.
4. Lay the inner box on its side and remove tape.
5. Remove the foam top and bottom inserts from the inner box. Lift the Reichert 7 out of the inner box.
6. Take the Reichert 7 out of the plastic bag and set the unit on a secure table.
7. Place the packing material in a safe place so that if transportation is required in the future, they will be available.

Instrument Setup (continued)

CAUTION: ENSURE THAT THE VOLTAGE APPLIED TO THE UNIT IS THE SAME AS THE VOLTAGE THAT IS INDICATED ON THE DATA PLATE NEXT TO THE INPUT CORD RECEPTACLE OR DAMAGE TO THE UNIT MAY OCCUR.

CAUTION: FOR CONTINUED PROTECTION AGAINST THE RISK OF FIRE, ANY REPLACEMENT OF DAMAGED FUSES MUST BE IN ACCORDANCE WITH THE FOLLOWING TYPE AND RATING.

(Use “T 2.50 AH, 250V” fuses)

1. After the unit is in its secure location, apply the correct input voltage to the instrument using the Power Cord that was contained in the Accessory Tray. Press down on the “|” located on the ON/OFF Switch. The power inlet is located on the underside of the unit (Refer to page 10, item 8 for location).

2. Read and fully understand the User’s Guide and the Quick Reference Card before operating this instrument.

WARNING: DO NOT REMOVE THE OUTSIDE COVERS OF THE UNIT OR ATTEMPT TO REPAIR ANY INTERNAL PARTS. REPAIR AND SERVICE OF THE UNIT MUST BE PERFORMED BY EXPERIENCE PERSONNEL OR DEALERS THAT ARE TRAINED BY REICHERT.

Instrument Setup (continued)

Parts Identification

1. **Operator Display:** Operator Display that displays measurement data.

2. **Printer Door:** Door (push to open) to access printer paper.

3. **Forehead Rest:** Alignment mechanism that moves right/left for correct patient positioning.

4. **Nosepiece Objective:** Air tube where “air puff” is emitted

5. **Canthus Alignment Marks (right and left side):** Alignment mark that indicates the vertical position of the center of the patient’s eye.

6. **ON/OFF Switch:** Switch that controls input power to the unit. “O” indicates OFF, and “ | ” indicates “ON”.

7. **USB Port:** Communication port that transfers printer data

8. **Main Power Connector and Fuse Holder:** Connection point for input power and the fuses. Press the top tab and bottom tab together on the fuse panel to remove the fuse holder and fuses. Located on underside of unit.

9. **Printer:** Thermal printer supplied with the unit.

Instrument Setup (continued)

Icon Definition

The Reichert 7 incorporates a user-friendly icon/menu-based operating system that will increase the speed of measurements, training and use. Below are the Icons that are used during the operation of this instrument.

Icon	Icon Description
	MENU — Accesses secondary level menus such as setup and help.
	MEASURE — Initiates a single-puff measurement process.
	TRIPLE MEASURE — Initiates a triple-puff measurement process.
	DEMO — Allows patient to feel a soft demonstration air puff.
	CLEAR DATA — Clears both right and left data on the Operator Display and in memory.
	PRINT — Sends the data to the printer.
	SERVICE — Displays service information.
	CANCEL — Cancels measurement process.
	PROCEED — Proceed with measurement process.
	SELECT — Confirms entry.

Instrument Setup (continued)

Default Settings

The Reichert 7 has default settings that are set at the factory. A summary of these settings is given on the next page. A detailed definition/explanation of each setting is given on pages 13-17.

The following steps provide the details on how to customize the default settings.

How to Customize:

1. Touch the screen on the MENU icon.
2. Touch the screen on the UP/DOWN arrows icon to choose the appropriate setup category (e.g., Printout Setup).
3. Touch the screen on the SELECT icon to display the parameters and settings of the setup categories.
4. Touch the screen on the UP/DOWN arrows icon to move the cursor box to the desired parameter.
5. Touch the screen on the SELECT icon to activate the highlighted parameter.
6. Touch the screen on the appropriate RIGHT/LEFT arrows icon to move the cursor box to the desired setting for the parameter.
7. Touch the screen on the SELECT icon to activate the highlighted setting.
8. Touch the screen on the BACK icon to step back through the previous menus until the Main Menu is shown.

⚠ **CAUTION:** DO NOT USE A POINTED OBJECT TO TOUCH THE SCREEN OR DAMAGE TO THE DISPLAY MAY RESULT.

Icon	Icon Description
	MENU — Accesses setup categories such as setup and help.
	BACK — Returns to preceding screen.
	RIGHT ARROW — Used in the setup menus to move right horizontally.
	LEFT ARROW — Used in the setup menus to move left horizontally.
	DOWN ARROW — Used in the setup menus to move down vertically.
	SELECT — Used in the setup menus to activate the new parameter or setting.

Default Settings (Continued)

This instrument is sent from the factory with measurement, printer, communication, and miscellaneous parameters set to default settings. These settings can be changed to suit the needs of the individual operator/clinician. A summary of these settings is given below with the default selections shown in bold type. To customize these settings, follow the steps given on page 9, Instrument Setup, Default Settings.

Customized Options
This instrument has the following default settings:

Tonometer Setup: (page 14)
Pressure: kPa **mmHg**

Printout Setup: (page 15)
Date Format: **MDY,** DMY, YMD
Time Format: **AM/PM,** 24 HR
Date: 12/18/2007
Time: 05:00PM
Printer: **On,** Off
Practice: **Reichert**

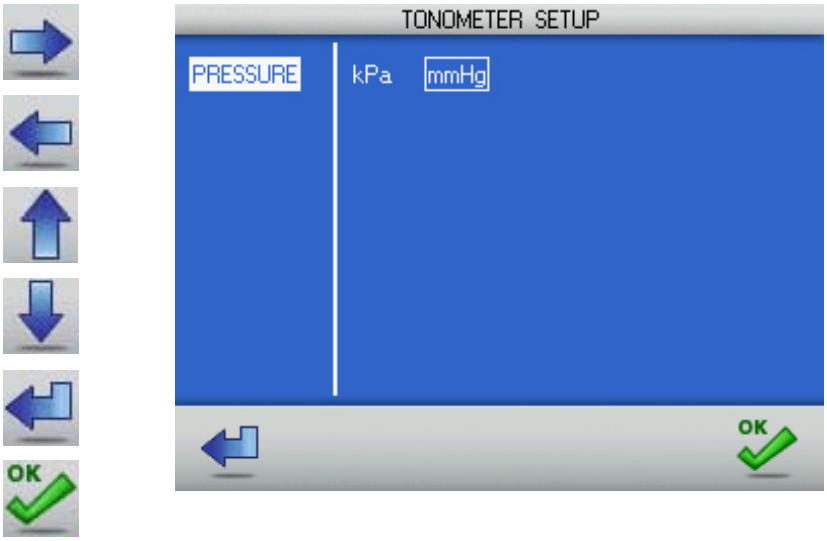
Communication Port Setup: (page 16)
Baud: 1200, 2400, 4800, 9600, **19200**
Parity: **None,** Even, Odd
Data Bits: 7, **8**
Stop Bits: **1,** 1.5, 2

General Setup: (page 17)

Language: **Eng,** Fra, Deu, Esp, Por, Ita
Tone: **On,** Off
Sleep: 5, **10,** 20, 90
Contrast: - | | | | | | | | +

Note: Default settings are shown in **Bold** type.

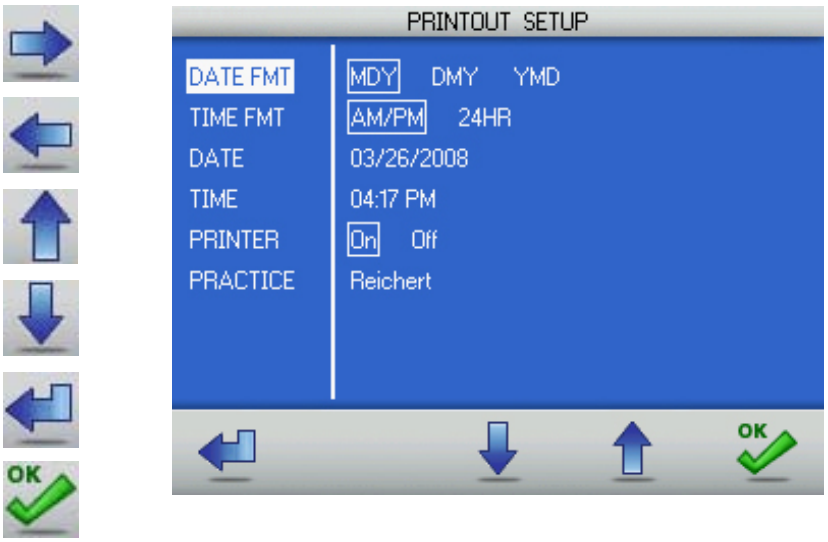
Tonometer Settings



The following options are available in the Tonometer Setup menu:

Parameters	Settings
PRESSURE	Choose either kilo Pascals (kPa) or millimeters of mercury (mmHg).

Printout Settings



The following options are available in the Printout Setup menu:

Parameters	Settings
DATE FMT	Choose the date format that will be shown on the printer aper: D=Day, M=Month, Y=Year.
TIME FMT	Choose the time format: AM/PM or 24 HR.
DATE	Change the current date. Use the PLUS (+) or MINUS (-) icons to increase or decrease the numbers, then touch the SELECT icon.
TIME	Change the current time. Use the PLUS (+) or MINUS (-) icons to increase or decrease the numbers, then touch the SELECT icon.
PRINTER	Option that sets the printer to print (ON) or not to print (OFF) when the print icon is touched.
PRACTICE	Up to 30 characters (letters and numbers) can be printed at the bottom of the printer paper. To change the characters, use the PLUS and MINUS icons to scroll through the alphabet. Once you have found the letter you require, touch the RIGHT or LEFT icon to move horizontally to the next letter. To exit, touch the SELECT icon, then the RETURN icon.

Instrument Setup (continued)

Communications Settings

The Reichert 7 can transfer data to an external device, such as a computer, through the USB port.

The following options are available in the Communications Setup menu:

Parameters	Settings
BAUD	Serial transmission data rate, transfers in bits per second (bps).
PARITY	Bits added to data transmission used to detect transmission errors. None, Even, or Odd are the available options.
DATA BITS	Number of bits that make up data transmission word. Usually 7 or 8 bits in length.
STOP BITS	Number of bits added to the end of the data transmission word to signal the end of transmission. Usually 1, 1.5, or 2 bits in length.
FLOW	The means used to control data transmission flow between the sender and the receiver. Often called handshaking. Can be either hardware or software controlled (Xon/Xoff) or none.
PRINTER	Option that sets the printer to print (ON) or not to print (OFF) when the print button is pressed. When the printer is set to OFF, the patient data is sent only to the USB port. When the printer is set to ON, the patient data is sent to the printer and the USB port.

Instrument Setup (continued)

General Settings

The following options are available in the General Setup menu:

Parameters	Settings
LANGUAGE	Sets the language that is used on the Operator Display.
TONE	The audible tone indicator (“beep”) can be set to be silent (OFF) or audible (ON).
SLEEP	Choose the duration of time (5, 10, 20 or 90 minutes) that the instrument is inactive before it initiates the “sleep” mode (the Operator Display goes blank when the “sleep” mode is active). To illuminate (“wake”) the Operator Display after the “Sleep” mode is active, press any Control Button.
CONTRAST	Changing the position of the slide bar adjusts the contrast of the Operator Display.

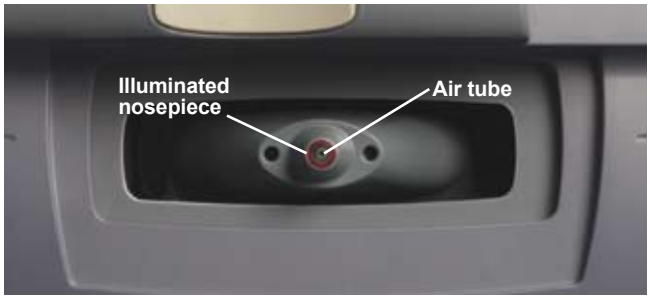
Alignment & Measurement

When power is applied to the Reichert 7, it will initially perform a calibration check. After completion of the calibration, the title screen will be displayed.

The Operator Display will then display a message to move the Forehead Rest fully to the left or right until it locks into position if it is not already in this position.

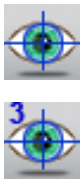
Alignment & Measurement (continued)

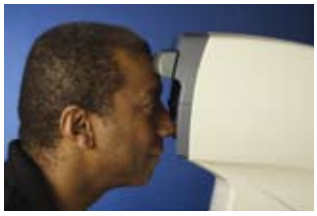
The Reichert 7 features a fully automated alignment system that enables the instrument to align itself to the apex of the patient's left or right eye. This innovative system makes the measurement process quicker and more comfortable for the patient. Perform the following steps to take a measurement of the patient's eye.



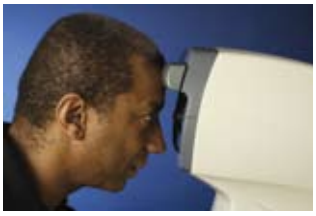
1. Instruct the patient to locate the air tube inside the red circle on the end of the nosepiece.
2. After they have located the air tube, have the patient find the green target inside the air tube and then slowly lean forward until their forehead is on the soft pad in the middle of the Forehead Rest. Refer to next page.

Alignment & Measurement (continued)





Proper patient alignment
(chin close to unit)

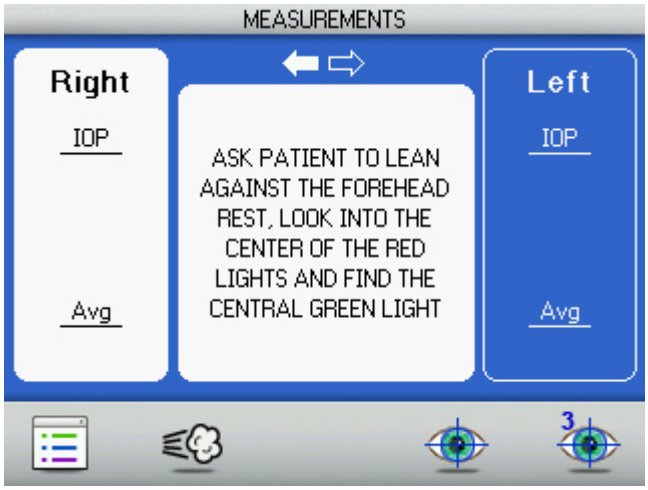


Improper patient alignment
(chin moved away from unit)

Note: If the patient cannot see the green target, use the canthus marks on the sides of the instrument to set the vertical alignment of the eye and then have the patient move forward until the center of their forehead is against the Forehead Rest pad.

Note: The patient should be seated comfortably on the patient side of the instrument.

Note: The patient should be positioned in a way that encourages them to lean forward with their chin as close to the instrument as possible. This will reduce the difficulties associated with misalignment and low confidence readings



Alignment & Measurement (continued)

3. Once the patient is leaning against the Forehead Rest, touch the Measure icon to begin the measurement process. Touching the Measure icon (one puff) will initiate a measurement with one puff. Touching the Triple Measure icon (three puffs) will initiate a measurement with three rapid puffs.

4. During the positioning process, the Operator Display will change and look similar to the one shown below. The measuring icon will move around on the Operator Display when the patient is within the instrument's acquisition zone. As the positioning system aligns to the apex of the eye, the measuring icon will move to the center of the screen and align over the center alignment mark (+). Once the positioning system is aligned the air "puff" or "puffs" are delivered to the eye and the pressure is acquired.

Note: If the instrument seems to have trouble acquiring the patient's eye during the measurement process (e.g., it keeps aligning but never takes a reading), it may be necessary to ask the patient to:

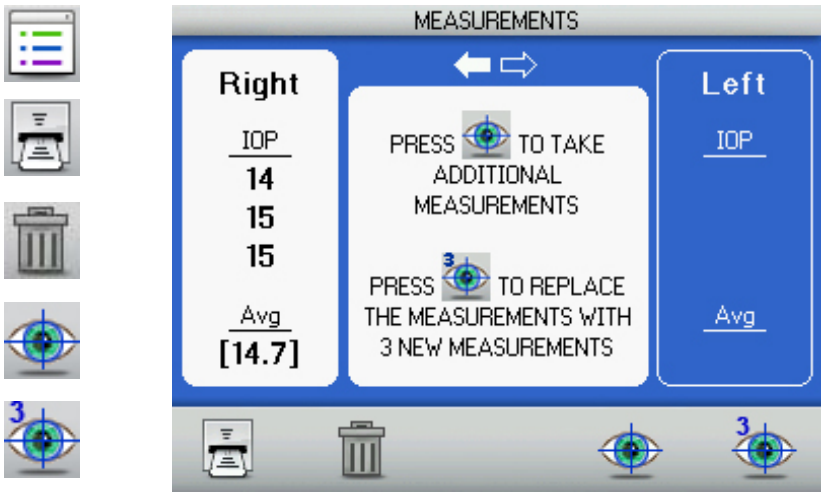
- Remain still and try not to move
- Open his/her eyes wider, or
- Tilt his/her head toward the window

Note: If the instrument still seems to have difficulty aligning to the patient's eye, refer to the Maintenance section of this manual and perform the Position Window Cleaning procedure.

Alignment & Measurement (continued)

5. After the measurement is completed for the first eye, ask the patient to move their forehead away from the instrument.

6. There are several options available at this point:
   a. The Forehead Rest may be slid to the opposite side to continue taking measurements on the other eye
   b. All data may be cleared and other measurements taken (touch the CLEAR icon)
   c. The data can be printed by touching the PRINT icon

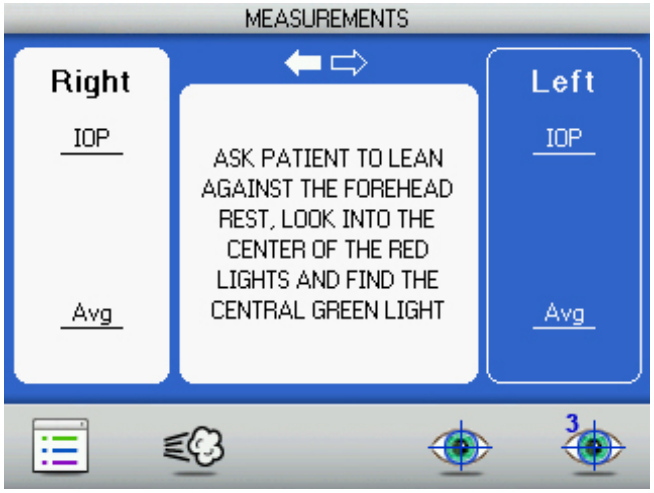


Note: The instrument will print out the data from both eyes if the PRINT icon is touched after both eyes are measured.

Demo Puff

Pressing the button under the DEMO icon initiates a sample air puff. This can be used to demonstrate the air puff to the patient.

After each time the DEMO button is pressed and the air puff is delivered, an internal check of the Reichert 7's systems is conducted to ensure optimum performance of your instrument.

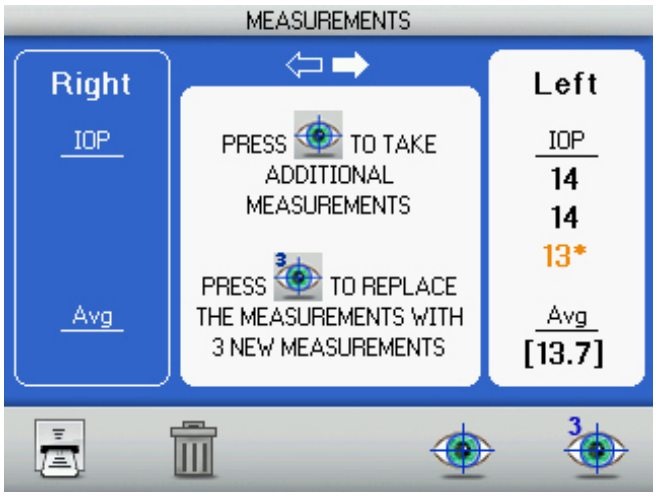


Note: The DEMO icon will not display if there are measurements displayed on the screen. Touch the DELETE icon to make the DEMO icon visible.

Low Confidence Readings

During the measurement process, the Reichert 7 may detect a condition that could create a low confidence reading, which is identified with an asterisk after the reading.

Asterisk readings can result from an untimely blink or interference from a patient's eyelashes. These measurements are highlighted with an asterisk next to the reading as shown below.

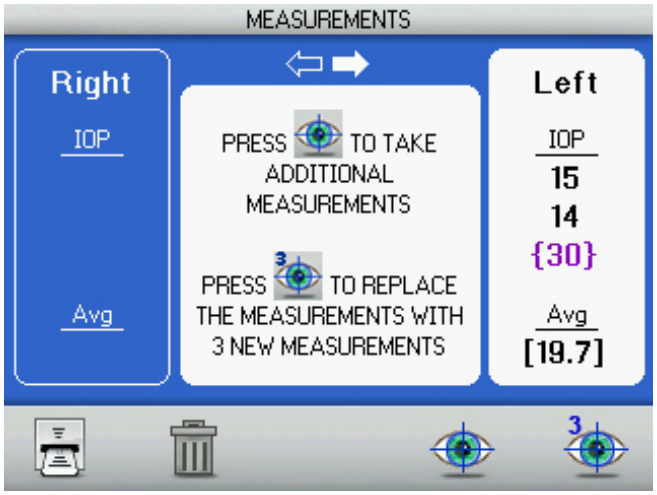


Note: If a reading has an asterisk following it, that reading will be used in the computation of the average value. A forth measurement can be taken by touching the Measure icon, which will result in the replacement of the asterisk reading with the new reading. Touching the Triple Measure icon will take three new readings.

Low Confidence Readings (continued)

Measurements with the Reichert 7 are made within a few milliseconds after the instrument “puffs” the eye. Since this measurement cycle is so short, IOP readings can be acquired at different times within a cardiac pulse period. Therefore, repetitive readings for an eye may fluctuate from 2 to 4 mmHg during this cardiac period.

Occasionally a reading greater than 4 mmHg may be shown (referred to as a “flier”) due to patient movement or other reasons. The Reichert 7 distinguishes these readings by putting brackets around the value, as shown on the screen below.



Note: If a reading is surrounded by brackets (a “flier”), it will be used in the computation of the average value and cause the average value to be out of range from the non-bracket readings. A forth measurement can be taken by touching the Measure icon, which will result in the replacement of the “flier” reading with the new reading. Touching the Triple Measure icon will take three new readings.

Too Far Activated

During the measurement process, the Reichert 7 may detect a situation where the patient's eye is too far from the nosepiece. Should this occur, the instrument will back away from the patient's eye and then start aligning and measuring again. After three attempts, the instrument will back away completely, and the screen will change to that shown below.

Should this situation arise, ask the patient to move away from the instrument, then reposition the patient and proceed with the next measurement.

Printing Measurement Data

To print the measurement data, touch the PRINT icon.

A sample printout is shown below.

Name: _____
10/08/2008 01:11 PM

	(R)	(L)
	14	13
	14	13
	14	13
	—	—
Avg	[14.0]	[13.0]

Reichert 7

Sample Printout

If you decide not to make a printout, touch the CLEAR DATA icon. This will clear all data from the memory and the screen. The instrument is now ready for the next patient.

Maintenance

Fuses

Fuses are located next to the power inlet (Refer to page 10, item 8). Replace fuses with only a rating of T2.50 AH 250V as indicated on the power inlet panel.

An internal fuse for the power circuits is located on the main circuit board inside the unit.

Note: Replacement of this fuse must be performed by qualified service personnel only.

External Cleaning

Clean the external surfaces of this instrument using a clean, soft cloth moistened with a mild detergent solution (1 cc of liquid dish soap to one liter of clean, filtered water (filtered below 5 microns)).

Forehead Rest Cleaning

For hygienic reasons, the Forehead Rest may be cleaned with a clean cloth moistened with a mild detergent solution (1 cc of liquid dish soap to one liter of clean, filtered water (filtered below 5 microns)).

Note: If the Forehead Rest pad must be sanitized, a sterile wipe may be used occasionally.

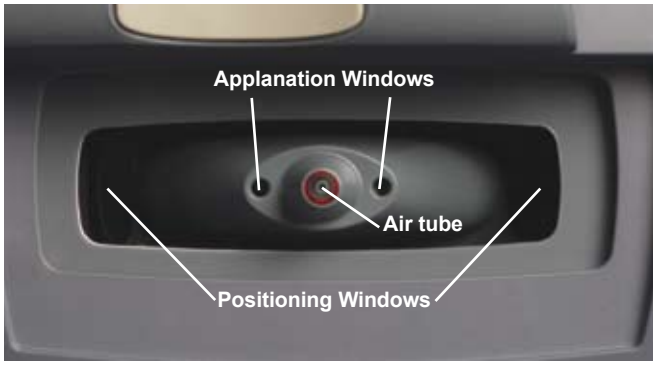
Positioning Windows Cleaning

When the Positioning Windows or the Applanation Windows become occluded with contaminants, degradation of the positioning signal occurs. When signal degradation occurs, the system may not recognize or position at the center of the eye. Consequently, the instrument will not find the center of the eye or align off center, which may prevent the unit from taking a measurement or can cause asterisk readings.

CAUTION: DO NOT USE ALCOHOL, SOLVENTS OR STRONG CLEANING SOLUTIONS ON THE ALIGNMENT WINDOWS OR DAMAGE TO THE WINDOWS WILL OCCUR.

Positioning Windows Cleaning (continued)

1. Locate the Positioning Windows and the Applanation Windows and wipe the outside surfaces with a clean, long handle cotton-tip swab moistened with a mild detergent solution (1 cc of liquid dish soap to one liter of clean, filtered water (filtered below 5 microns)) to remove dirt and contaminants.
2. Remove any remaining dust or foreign particles using only clean, dry, compressed air at less than 90 psig (620 kPa).



Positioning Windows

Operator Display Cleaning

Use a clean, soft cloth with neutral detergent or ethanol to clean the operator display. Do not use any chemical solvent, acidic, or alkali solution.

Printer Paper

To change the printer paper, remove the printer paper door to expose the printer paper compartment. Remove the cardboard roll and place a new roll of thermal printer inside the printer paper compartment as shown below. To order replacement thermal paper, call your local dealer and ask for replacement paper.

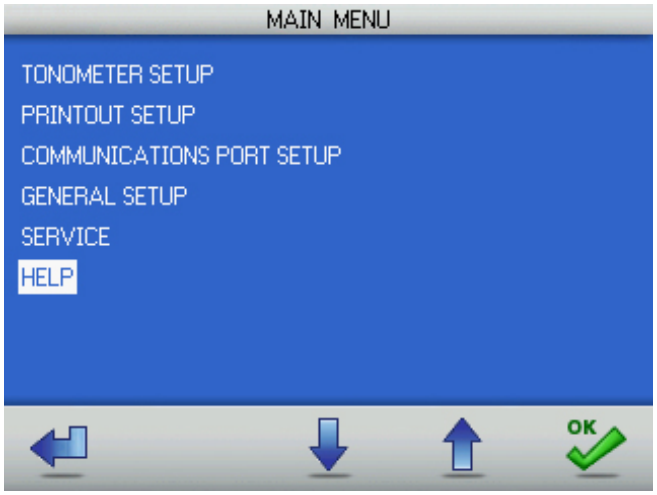
Printer Paper Replacement

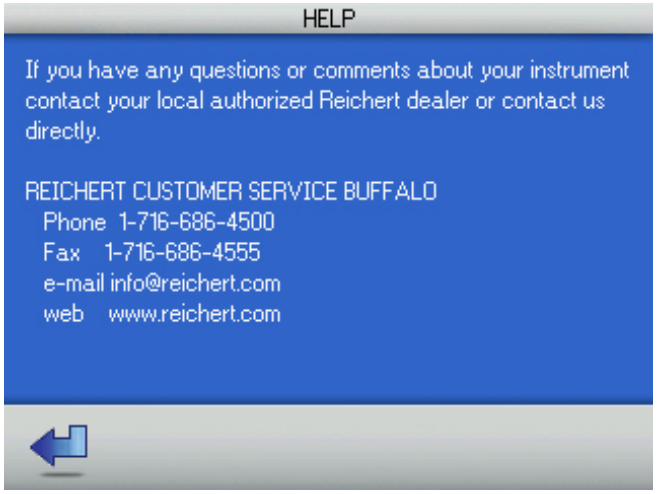
Troubleshooting

Help Screens

The Reichert 7 includes HELP screens, which provide useful information and tips on its operation. These screens are intended to be used as a quick reference to a selection of operations.

To access the HELP menu, touch the MENU icon. Press the DOWN ARROW icon until the cursor box is positioned on HELP. Then touch the SELECT icon to access the HELP screen.




HELP
If you have any questions or comments about your instrument contact your local authorized Reichert dealer or contact us directly.
REICHERT CUSTOMER SERVICE BUFFALO
Phone 1-716-686-4500
Fax 1-716-686-4555
e-mail info@reichert.com
web www.reichert.com

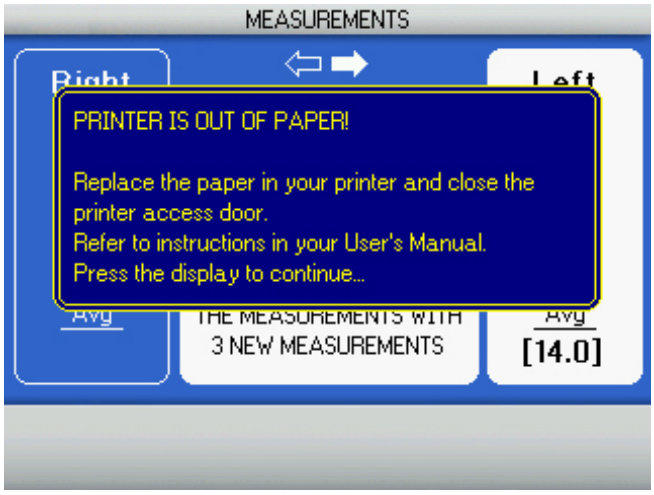
Troubleshooting (continued)

The following chart provides details of common problems and solutions for the Reichert 7.

Definition	Probable Cause	Solution
Screen blank.	Unit in Sleep Mode. ON/OFF Switch set to OFF. Contrast is set too low. Fuse(s) Blown.	Touch any icon. Press the "|" on the ON/OFF Switch. Adjust contrast in Setup menu. Replace blown fuse(s) (Refer to page 28). Press the ON/OFF button to OFF, wait 2 minutes then push it to ON.
Instrument not responding to icon touch.	Instrument is "locked up." Touch screen needs recalibrating	Press on the "blue dot" displayed on the screen at different locations to re-calibrate the touch screen
Position Patient Message shown.	Patient not looking at green fixation LED.	Instruct patient to look for green LED, then move in toward headrest.
Does not find the eye (moves straight out, then goes straight back).	Dirty Positioning Windows. External light confusing positioning system.	Clean the Positioning Windows (Refer to the Maintenance section of this manual) Isolate sources of external light (e.g., incandescent or infrared light) and remove light source.
Finds one eye not the other. Infrared interference.	Light interference on measuring side.	Remove interference (e.g., infrared light source).
Will not take a reading.	Patient not holding still. Patient's eye too far from Patient Window. Patient not focusing on target (eye moving around). Patient has dry eye. Dirty Positioning Windows.	Encourage patient to remain still. Have patient move toward nosepiece. Have patient look only at target. Have patient blink eyes. Clean the Positioning Windows (Refer to the Maintenance section of this manual).
Asterisk readings or No Applanation readings.	Unit needs reboot of hardware. Dirty Positioning Windows.	Unplug unit, wait 2 minutes then apply input power. Clean the Positioning Windows (Refer to the Maintenance section of this manual).
Printer not printing.	Printer out of paper. Printer paper in backwards. Not using Reichert thermal paper.	Replace paper with Reichert P/N 12241. Reverse the printer paper.

Print-Related Errors

If your printer runs out of paper during a print cycle, the following message will appear.


MEASUREMENTS
PRINTER IS OUT OF PAPER!
Replace the paper in your printer and close the printer access door.
Refer to instructions in your User's Manual.
Press the display to continue...
3 NEW MEASUREMENTS
Avg
[14.0]

Note: If the printer paper runs out before printing all the measurement data, the data will be stored. Once the printer paper is replaced, a complete print out of all measurement data will start.

Guidance Tables

Table 201 – Guidance and Manufacturer's Declaration

Emissions

All Equipment and Systems

Guidance and Manufacturer's Declaration – Emissions

The Non-Contact Tonometer, Reichert 7 is intended for use in the electromagnetic environment specified below. The customer or user of the Non-Contact Tonometer, Reichert 7 should ensure that it is used in such an environment.

Emissions Test	Compliance	Electromagnetic Environment - Guidance -
RF Emissions CISPR 11	Group 1	The Non-Contact Tonometer, Reichert 7 uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
Harmonics IEC 61000-3-2	Class A	
Flicker IEC 61000-3-3	Complies or N/A	The Non-Contact Tonometer, Reichert 7 is suitable for use in all establishments, other than domestic, and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.

Table 201 – Guidance and Manufacturer's Declaration

Immunity

All Equipment and Systems

Guidance and Manufacturer's Declaration – Emissions

The Non-Contact Tonometer, Reichert 7 is suitable for use in all establishments, other than domestic, and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes. is intended for use in the electromagnetic environment specified below. The customer or user of the Non-Contact Tonometer, Reichert 7 should ensure that it is used in such an environment.

Immunity Test	**IEC 60601 Test Level**	**Compliance Level**	**Electromagnetic Environment** - Guidance
ESD IEC 61000-4-2	±6kV Contact ±8kV Air	±6kV Contact ±8kV Air	Floors should be wood, concrete or ceramic tile. If floors are synthetic, the r/h should be at least 30%.
EFT IEC 61000-4-4	±2kV Mains ±1kV I/Os	±2kV Mains ±1kV I/Os	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1kV Differential ±2kV Common	±1kV Differential ±2kV Common	Mains power quality should be that of a typical commercial or hospital environment.
Voltage Dips/Dropout IEC 61000-4-11	>95% Dip for 0.5 Cycle 60% Dip for 5 Cycles 30% Dip for 25 Cycles >95% Dip for 5 Seconds	>95% Dip for 0.5 Cycle 60% Dip for 5 Cycles 30% Dip for 25 Cycles >95% Dip for 5 Seconds	Mains power quality should be that of a typical commercial or hospital environment. If the user of the Reichert 7 requires continued operation during power mains interruptions, it is recommended that the Reichert 7 be powered from an uninterruptible power supply or battery.
Power Frequency 50/60Hz Magnetic Field IEC 61000-4-8	3A/m	3A/m	Power frequency magnetic fields should be that of a typical commercial or hospital environment.

Table 204 – Guidance and Manufacturer's Declaration

Emissions

Equipment and Systems that are NOT Life-supporting

Guidance and Manufacturer's Declaration – Emissions

The Non-Contact Tonometer, Reichert 7 is intended for use in the electromagnetic environment specified below. The customer or user of the Non-Contact Tonometer, Reichert 7 should ensure that it is used in such an environment.

Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment - Guidance
Conducted RF IEC 61000-4-6 Radiated RF IEC 61000-4-3	3 Vrms 150 kHz to 80 MHz 3 V/m 90 MHz to 2.5 GHz	(V1)=3Vrms (E1)=3V/m	Portable and mobile communications equipment should be separated from the Reichert 7 by no less than the distances calculated/listed below: D=(3.5/V1)(Sqrt P) D=(3.5/E1)(Sqrt P) 80 to 800 MHz D=(7/E1)(Sqrt P) 800 MHz to 2.5 GHz Where P is the max power in watts and D is the recommended separation distance in meters. Field strengths from fixed transmitters, as determined by an electromagnetic site survey, should be less than the compliance levels (V1 and E1). Interference may occur in the vicinity of equipment containing a transmitter.

Table 206 – Recommended Separation Distances between portable and mobile RF

Communications equipment and the Reichert 7

Equipment and Systems that are NOT Life-supporting

Recommended Separation Distances for the Reichert 7

The Non-Contact Tonometer, Reichert 7 is intended for use in the electromagnetic environment in which radiated disturbances are controlled. The customer or user of the Non-Contact Tonometer, Reichert 7 can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF Communications Equipment and the Non-Contact Tonometer, Reichert 7 as recommended below, according to the maximum output power of the communications equipment.

Max Output Power (Watts)	Separation (m) 150kHz to 80 MHz D=1.1667(Sqrt P)	Separation (m) 80 to 800 MHz D=1.1667(Sqrt P)	Separation (m) 800MHz to 2.5GHz D=2.3333(Sqrt P)
0.01	0.1166	0.1166	0.2333
0.1	0.3689	0.3689	0.7378
1	1.1666	1.1666	2.3333
10	3.6893	3.6893	7.3786
100	11.6666	11.6666	23.3333

General Specifications

Specifications:

Height:	19.75 in	(50.2 cm)
Width:	10.5 in	(26.7 cm)
Depth:	14 in	(35.6 cm)
Weight, unpacked:	23 lbs	(10.43 kg)
Voltage:	100/240 VAC	
Frequency:	50/60 Hz	
Measurement Range:	7 – 60 mm Hg	(ISO 8612 Tonometer Standard)

Ordering Information – Accessories

Description

Printer Paper
Dust Cover
Reichert 7 Quick Reference Card

To order any of these accessories, contact your local authorized Reichert dealer.

Warranty

This product is warranted by Reichert, Inc. (“Reichert”) against defective material and workmanship under normal use for a period of one year from the date of invoice to the original purchaser. (An authorized dealer shall not be considered an original purchaser.) Under this warranty, Reichert’s sole obligation is to repair or replace the defective part or product at Reichert’s discretion.

This warranty applies to new products and does not apply to a product that has been tampered with, altered in any way, misused, damaged by accident or negligence, or that has the serial number removed, altered or effaced. Nor shall this warranty be extended to a product installed or operated in a manner not in accordance with the applicable Reichert instruction manual, nor to a product that has been sold, serviced, installed or repaired other than by a Reichert factory, Technical Service Center, or authorized Reichert, Inc. Dealer.

Lamps, bulbs, charts, cards and other expendable items are not covered by this warranty.

All claims under this warranty must be in writing directed to the Reichert factory, Technical Service Center, or authorized instrument dealer making the original sale and must be accompanied by a copy of the purchaser’s invoice.

This warranty is in lieu of all other warranties implied or expressed. All implied warranties of merchantability or fitness for a particular use are hereby disclaimed. No representative or other person is authorized to make any other obligations for Reichert. Reichert shall not be liable for any special, incidental, or consequent damages for any negligence, breach of warranty, strict liability or any other damages resulting from or relating to design, manufacture, sale, use or handling of the product.

PATENT WARRANTY

If notified promptly in writing of any action brought against the purchaser based on a claim that the instrument infringes a U.S. Patent, Reichert will defend such action at its expense and will pay costs and damages awarded in any such action, provided that Reichert shall have sole control of the defense of any such action with information and assistance (at Reichert’s expense) for such defense, and of all negotiation for the settlement and compromise thereof.

PRODUCT CHANGES

Reichert reserves the right to make changes in design or to make additions to or improvements in its products without obligation to add such to products previously manufactured.

CLAIMS FOR SHORTAGES

We use extreme care in selection, checking, rechecking and packing to eliminate the possibility of error. If any shipping errors are discovered:

1. Carefully go through the packing materials to be sure nothing was inadvertently overlooked when the unit was unpacked.
2. Call the dealer you purchased the product from and report the shortage. The materials are packed at the factory and none should be missing if the box has never been opened.
3. Claims should be filed within 30 days.

CLAIMS FOR DAMAGES IN TRANSIT

Our shipping responsibility ceases with the safe delivery in good condition to the transportation company. Claims for loss or damage in transit should be made promptly and directly to the transportation company.

If, upon delivery, the outside of the packing case shows evidence of rough handling or damage, the transportation company's agent should be requested to make a "Received in Bad Order" notation on the delivery receipt. If within 48 hours of delivery, concealed damage is noted upon unpacking the shipment and no exterior evidence of rough handling is apparent, the transportation company should be requested to make out a "Bad Order" report. This procedure is necessary in order for the dealer to maintain the right of recovery from the carrier.

Reichert, Inc.
3362 Walden Ave
Depew, NY 14043
USA

Toll Free: 888-849-8955
Phone: 716-686-4500
Email: info@reichert.com
www.reichert.com

Reichert GmbH
Hubertstrasse 2
D-82229 Seefeld
Germany

Tel: +49 8152 993530
Fax: +49 8152 993535

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